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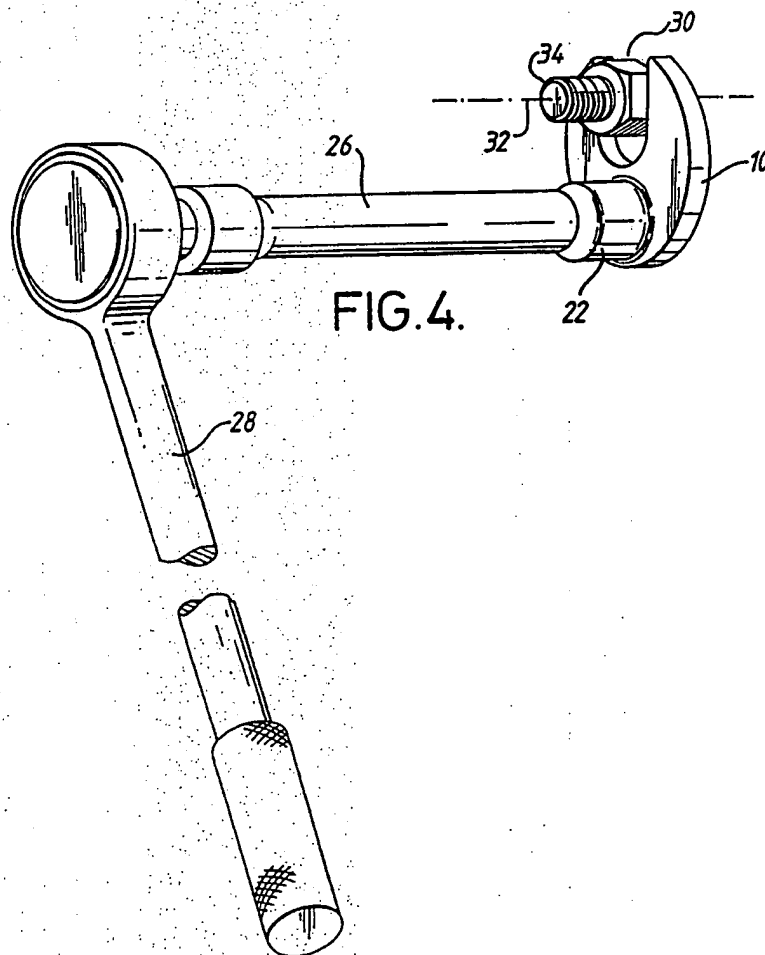
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(56) Documents cited
GB 1220923 A GB 1105995 A GB 0843944 A
GB 0810136 A GB 0694609 A GB 0416138 A
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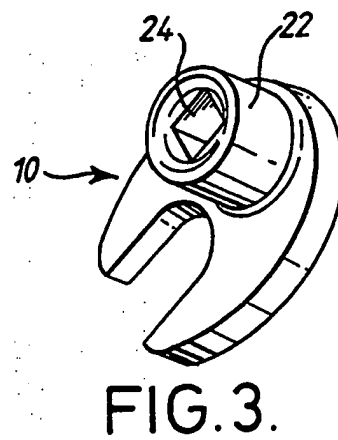
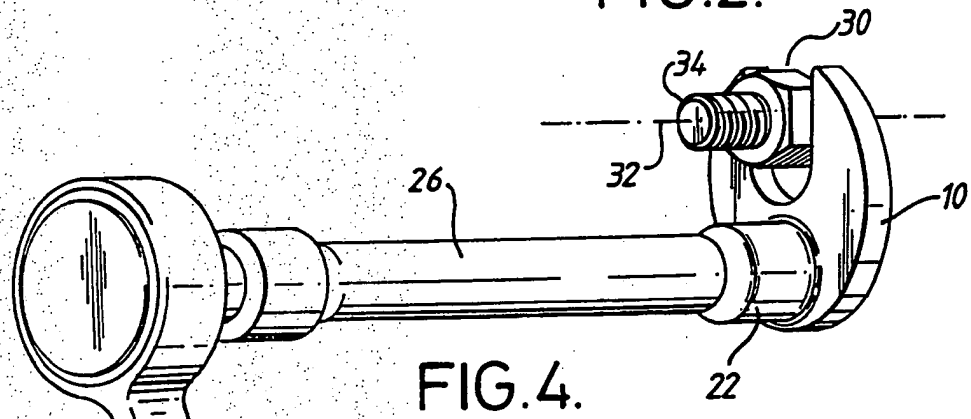
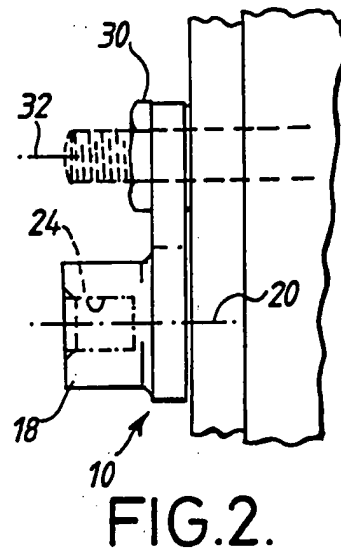
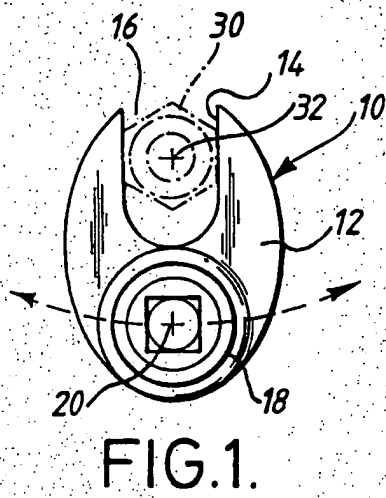
(58) Field of search
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(54) Spanners

(57) A spanner for use in confined spaces comprises a socket wrench 28 carrying a drive bar 26, with an attachment 10 comprising a body having a recess for engaging a nut 30 and a socket 22 defining an offset axis, with the free end of the drive bar fitted in this socket. The offset axis is moved around the fastener axis 32 to tighten or loosen the nut.



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SPANNERS

This invention relates to spanners for manipulating fastener elements such as bolts, studs and nuts, and is applicable to any such fastener element having two parallel faces which can be engaged by two corresponding parallel faces of a spanner so as to rotate the fastener element. Typically the latter is an hexagonal nut, or a bolt or stud having an hexagonal head.

Such fasteners are often located in awkward positions in which there is insufficient space for a conventional open-ended spanner to be rotated about the axis of the fastener. A common solution to this problem is to use a socket spanner, but this relies on a direct line being available, as an extension of the axis of the fastener, to accommodate the tool which carries the socket. Conventionally such a tool consists of a bar which is rotated about the fastener axis by a ratchet wrench to which the other end of the tool is attached. Socket sets may include universal joints for connection between the wrench and the socket, to enable a connection to be made between them even when no direct straight line is available.

However, there are some occasions when a socket cannot be used at all, either because the site of the fastener is inaccessible even if a universal joint is used, or because the nut is so placed that a socket cannot be fitted over it. A typical example of the latter situation is where a nut is mounted in pipework extending axially away from the nut, so that the only possible tool capable of rotating the nut is one which can be introduced from the side, i.e. an open-ended spanner or wrench. Many such situations arise in plumbing work, a specific example being a nut securing a

tap to a bath or basin, with the nut lying in a very restricted space behind the part of the bath or basin that carries the tap.

According to the invention, a spanner attachment comprises a leaf formed with a recess open at one side for fitting to a fastener element, and connection means carried by the leaf and defining an axis offset from the recess, for mounting the attachment on a manipulating tool.

The manipulating tool may typically be a conventional socket wrench carrying a bar designed for carrying a socket spanner on its free end. The connection means may consist of a socket for accommodating such a bar, or a spigot (typically of square or hexagonal cross section), for fitting into a socket carried by such a bar.

A tool which includes a spanner attachment according to the invention is essentially an open-ended spanner which is cranked by virtue of the offset mentioned above, so that access can be obtained to the fastener without the need for space to be available to rotate a conventional open-ended spanner at the level of the fastener, and without the need for space to be available for any part of the tool to project coaxially away from the fastener.

An embodiment of the invention will now be described, by way of example only and with reference to the accompanying drawings, in which:-

Figure 1 is a view of a spanner attachment according to the invention, seen in the axial direction;

Figure 2 is a view as seen from the right hand side of Figure 1;

Figure 3 is a perspective view of the attachment; and

Figure 4 is a perspective view showing a tool in use, including the attachment.

The spanner attachment 10 comprises a flat leaf 12 having a recess 14 open at one side 16, together with connection means 18 carried by the leaf 12 and defining an axis 20 which is offset from the recess 14. The connection means 18 is in the form of a boss 22 formed with a square socket 24 in which a drive bar 26 of a conventional socket spanner set can be removably fitted at one end of the bar 26, the other end of which is carried by an ordinary ratchet wrench 28. The recess 14 has two parallel sides for fitting to an hexagonal element 30, which as shown in the drawings is a nut but which might equally well be the head of a bolt or stud.

In operation, the whole assembly of the tool 28, 26, 10 is rotated about the axis 32 of the fastener comprising the nut 30 and a male threaded member 34 on which it is screwed or to be screwed. It will thus be seen that the axis 20, which is also the axis of the bar 26, is moved along a circular path coaxial with the nut, as indicated by the arrows in Figure 1.

If the male member 34 is a pipe or other axially-projecting component that precludes the use of a socket spanner, it can be seen that the tool is still able to operate. Its versatility may be further increased by the use, in the usual way, of a universal joint between the attachment 10 and the wrench 28.

The attachment 10 may be forged in a single piece, or the connection means 18 may be a separate component attached to the leaf 12 by welding or in any other suitable way. In

place of the bush 22, a male element for engagement in a socket such as a conventional socket spanner carried by the bar 26, may be used.

Sets of leaf attachments such as the attachment 10 may be supplied to fit different sizes of hexagon fastener.

CLAIMS

1. A spanner attachment comprising a leaf formed with a recess open at one side for fitting to a fastener element, and connection means carried by the leaf and
5 defining an axis offset from the recess, for mounting the attachment on a manipulating tool.
2. A spanner assembly comprising a manipulating tool, a spanner attachment according to Claim 1, and a connecting member fitted between the connection means
10 of the latter and the manipulating tool, whereby when the recess is engaged with a fastener, the spanner can be rotated about an axis of the fastener by causing the offset axis to precess around the fastener axis.
3. An assembly according to Claim 2, wherein the
15 manipulating tool is a ratchet wrench.
4. A spanner attachment substantially as described in the foregoing description with reference to the accompanying drawings.
5. A spanner assembly substantially as described in
20 the foregoing description with reference to Figure 4 of the accompanying drawings.

Amendments to the claims have been filed as follows

1. A spanner assembly comprising: a ratchet wrench;
a spanner attachment comprising a leaf formed with a
recess open at one side for fitting to a fastener
5 element, and connection means carried by the leaf and
defining an axis offset from the recess; and a
connecting bar fitted along the said offset axis to the
said connection means and to the ratchet wrench,
whereby when the recess is engaged with a fastener, the
10 spanner can be rotated by the ratchet wrench about an
axis of the fastener by causing the offset axis to
precess around the fastener axis.
2. A spanner assembly substantially as described in
the foregoing description with reference to the
15 accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under
Section 17 (The Search Report)

Application number

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Relevant Technical fields

- (i) UK Cl (Edition L) B3N
- (ii) Int Cl (Edition 5) B25B

Databases (see over)

(i) UK Patent Office

(ii)

Search Examiner

V L C PHILLIPS

Date of Search

18 MAY 1993

Documents considered relevant following a search in respect of claims 1-5

Category (see over)	Identity of document and relevant passages		Relevant to claim(s)
X	GB 1220923 A	(DAVIES) see Figures 1, 2	1
Y	GB 1105995 A	(KELSEY) see Figure 1	2, 3
X	GB 843944 A	(EGERTON) see page 2	1
Y		lines 16-19	2, 3
X	GB 810136 A	(DAVIES) see Figure 6	1
X	GB 694609 A	(TUBING) see Figures 1, 6	1
X	GB 416138 A	(WATTS) see Figures 1, 2	1
X	WO 88/09244 A1	(BOEING) see Figure 3	1

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

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Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).